Guidelines set for soft drink containers

In a special meeting in Toronto with representatives of the soft drink industry, Environment Minister William G. Newman laid down firm guidelines and a strict deadline for reducing the use of non-refillable containers.

He told representatives of companies involved in the manufacturing, packaging, distribution and sale of carbonated soft drinks that the government wants firm commitment from the industry to take these four steps:

"First:—All brands and package sizes of carbonated soft drinks stocked and sold by a retailer in Ontario must be offered for sale in refillable containers.

"Second:—The price structure imposed on these soft drinks must reflect the desirability of refillable bottles.

"Third:—Convenient distribution and return systems must be reinstated to encourage consumer use of the refillable container.

"And finally, the availability of the refillable container must be promoted by the industry," Mr. Newman said.

VISIBLE EFFORT

The recently appointed Waste Management Advisory Board, chaired by R. H. Woolvett, will be looking for a visible demonstration of the industry's willingness to co-operate within the next six months and for substantial progress in restoring the use of the refillable container within 12 months.

Mr. Newman urged the industry to work closely with the board to meet the challenge involved. "I hope sincerely that this board advises me that legislative action will not be necessary. I am confident that you have the ability and the wisdom to put your own house in order."

But he stressed: "I must warn you that if you do not effect your own solution, a solution will be found for you."

DEADLINE

In setting the deadline for action, he said, the problems involved in production of refillable bottles, design, equip-

(Continued Page 3)

ENVIRONMENT ONTARIO LEGACY
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Sod-turning launches reclamation

Environment Minister William G. Newman and Metro Chairman Paul Godfrey (right) break ground for the new experimental plant for resource recovery.

With pick and shovel, Environment Minister William G. Newman and Metropolitan Toronto Chairman Paul Godfrey broke ground March 10 for the first physical installation in a 15-year, $500 million resource recovery program.

A bulldozer idled on standby as the two men attacked the frozen ground on Vanley Drive in North York, turning the sod for the $9.2 million Experimental Plant for Resource Recovery. Everett Biggs, deputy minister for the Ontario Ministry of the Environment, described the new experimental plant as "the workshop where reclamation will be developed to its highest state."

As the bulldozer rolled off its carrier, the official party and guests left for the nearby Centre for Resource Recovery, the Environment Ontario building on Chesswood Drive that forms the hub of the entire waste program.

SYMBOL

"Perhaps you noticed the symbol on the signs at the experimental plant site and outside this building—a circle of four arrows. This was designed as a graphic representation of our objectives in this program," Mr. Newman told guests at the Centre.

"We call these arrows the four Rs — Reuse, Recycle, Reclaim and Reduce. They sum up our total approach to waste management."

"The experimental plant and this centre are especially significant to two of these Rs — recycling and reclamation. It is being constructed at an estimated cost of $9.2 million which is being shared by the Ontario Ministry of the Environment and by Metropolitan Toronto," Mr. Newman said.

"The federal government is also considering financial participation in this project. This shared concern and ready co-operation is providing us with a research centre that is without equal anywhere else in the world.

PRACTICAL

"This places us in a position to develop recycling and reclamation of waste on a practical basis, using Canadian expertise and technology. Over the next few years, I expect to see other communities — other countries — here to study what takes place in this plant with a view to applying it to their own waste problems."

He remarked that some of the guests represented industries taking part in reclamation research. "I believe these people are among the first to recognize the full scope of

(Continued Page 2)

Look, up in the sky, it's . . . !

For more than two years, the world's tallest chimney has been in operation at the International Nickel Co. smelter at Copper Cliff.

Towering a quarter-mile over the Sudbury skyline, it was constructed by INCO and approved by the Ontario Ministry of the Environment as an interim step in the company's air pollution control program, to reduce ground level concentrations of sulphur dioxide by dispersion.

But dispersion — spreading stack emissions to the point where they are diluted in the air—has never been accepted as the final solution to air pollution control. INCO's abatement program calls for measures to reduce the amount of sulphur dioxide produced at the source. The stack provides an added benefit, when the final control program is operating, in that the dispersion capability will remain in the event of a breakdown in other control equipment.

Two years of intensive study have shown that the superstack has done the job for which it was intended. Environment Ontario's study program was designed for a hard look at the facts, in full awareness of the shortcoming inherent in any interim control measure.

As a result of this environmental investigation, reports and summaries were prepared and distributed in the Sudbury area to keep the public and concerned community groups aware of the intended aims and limitations of the superstack.

(See Reports, Page 8)

Northeastern Region Director Ralph Moore (left) goes over Inco stack report with Ministry staff members Les Fitz, Bill Gibson, Dr. David Balsillie and Nels Conroy.

Metro Chairman Godfrey (left) and Environment Minister Newman discuss the new experimental plant for resource recovery over an architect's model of the new facility.

WASTE ADVISORY BOARD:

Ontario wastewatchers

An 11-member Waste Management Advisory Board has been appointed as Ontario's watchdog on waste, Environment Minister William G. Newman announced recently.

"This is another significant step toward the day when waste reduction and resource recovery finally drive the word garbage from our day-to-day vocabulary in this province," Mr. Newman said.

"I'm sure the recommendations to come from this board will provide a continuing source of valuable assistance to Environment Ontario in its battle against avoidable waste."

The board is chaired by Robert Woolvett, Vice-President of Brewers Warehousing Company Limited, who headed Environment Ontario's Solid Waste Task Force.

The members are: William Stadelman, Toronto; Mrs. Frances MacOdrum, Brockville; Prof. Morris Wayman, Toronto; Edward Chmielewski, Toronto; Dr. Robert A. Green, Petrolia; Dianna Pilsworth, Kanata; Maurice Hotte, Cochrane; G. R. Robertson, London; Peter C. Eberlee, Whitby; and Ronald Zwarych, St. Catharines.

Mr. Newman said the board's main role will be to advise on the means of reducing the quantity of waste produced in Ontario and on the development of resource recovery throughout the province.

OBJECTIVES

Specific objectives include:

—Reporting the effects of government directives and regulations imposed to reduce the quantity of waste generated.

—Examining trends in packaging, merchandising and consumer habits which may result in unnecessary waste production, increased waste management costs or problems in resource recovery.

—Examining ways to change packaging, merchandising and consumer habits to combat these problems.

—Improving communication and co-operation on waste among government, the public and industry.

—Recommending priorities in waste reduction and resource recovery research.

—Reporting on the secondary materials industries, their capacity to deal with increased flows of reclaimed material and ways to expand this capacity.

—Examining the ability of raw material users to use reclaimed material and developing alternative strategies to overcome any social, legal, economic or technological restraints.

MEMBERS

Mr. Woolvett, chairman of the board, has held various posts in the brewing industry for the past 12 years and since 1971 has been vice-president of Brewers Warehousing Ltd.

Mr. Chmielewski, a past member of the Toronto Recycliing Action Committee, has served as a Community Service Labor Liaison officer with the United Way since June of 1973.

Mr. Eberlee, vice-president of Totten, Sims, Hubicki (Canada) Ltd., is actively involved in water supply, sewage disposal and solid waste disposal in Ontario.

Dr. Green, an Alberta native who has practiced veterinary medicine in Petrolia since 1951, has served on the Petrolia town council, has been a member of the Board of Parks Management for the past 12 years and is currently a member of the Senate of the University of Guelph.

Mr. Hotte, a native of Cochrane and current Mayor of the town of Cochrane, brings to the board a wealth of private business and municipal experience. Mr. Hotte is president of the Northeastern Ontario Municipal Association.

Mrs. MacOdrum, a New Brunswick native, has just completed 14 years service as an alderman for the City of Brockville. As alderman, she was a member of the Brockville Pollution Control Committee, the Environmental Protection Committee and the executive board of the Association of Municipalities of Ontario.

Mrs. Pilsworth of Kanata, founding co-ordinator of Kanata Pollution Probe, has worked with Ottawa Pollution Probe, is a participant in a township paper and glass recycling program and has had published a report titled Municipal Recycling Practices in March Township.

Mr. Robertson, a member of the American Public Works Association, has been employed by the City of London since 1964 and is currently in charge of the city's sanitation and pollution control division.

Mr. Stadelman, of Shakespeare, Ontario, joined the Ontario Research Foundation in 1950 as secretary-treasurer and has been president of the Foundation for the past 11 years.

Professor Wayman is a professor of chemical engineering and applied chemistry and a professor of forestry at the University of Toronto, with much of his current work related to waste reclamation.

Ron Zwarych, of Thorold, is operator of the first auto reclamation centre to be certified under Environment Ontario's derelict motor vehicles regulations. His centre has been cited as one of North America's two most beautiful wrecking yards.

Changing the cycle of waste

(Continued from Page 1)

their environmental responsibility.

"It is established in our industrial community that an industry which draws water from the community has a responsibility to return that water in good condition.

"It is also established and accepted that an industry which shares the air of a community has a responsibility to maintain the quality of that air.

"Today we see the dawning recognition of another basic environmental responsibility — the responsibility of an industry, drawing on common resources, to conserve and reclaim those resources," Mr. Newman said.

CYCLE

The Minister said that prosperity in North America has been based on a cycle of waste—producing, consuming and discarding goods. There are problems looming in supply of raw resources at one end of the sequence and in the increasing production of waste material at the other, he said.

Ontario is working to change the cycle of waste and Mr. Newman called for co-operation from the public and from industry. In particular, he announced that he would be asking the soft drink industry for some "basic commitments to the reduction of waste.

He praised Metropolitan Toronto's co-operation in the experimental plant and the municipality's interest in improving methods of coping with waste.

MODULES

The plant itself includes modules for recovering and baling paper and cardboard, for recovering metals, for recovering energy and for composting organic material. The 200-ton-a-day installation is designed for the addition of experimental modules to test and develop advanced recycling and reclamation techniques.

The reclamation systems developed in the experimental installation will be applied, as they become practical, to functioning plants to be developed under the resource recovery program to serve all but the smallest communities in the province.

The comprehensive resource recovery program is the most advanced waste management plan in North America and compares with any similar program in the world. It was initiated by the Ontario Ministry of the Environment and includes the establishment of solid waste disposal plants in six major cities, a program to convert garbage into energy to fuel plants and a large scale development of resource recovery techniques aimed at the recycling of resources reclaimed from Ontario's eight million tons of garbage each year, as first stages.

Robert Woolvett, chairman of the advisory board, and Environment Minister Newman discuss the reclamation program.

Harry Smith joins Hearing Board

Harry Montgomery Smith, former mayor of Ajax, has been appointed to the Environmental Hearing Board for a period of two years.

The Board, established in 1972, is responsible for holding public hearings throughout the province on environmental matters.

Mr. Smith was born in Bowmanville in 1922 and was educated in Bowmanville and Toronto. During World War II he served with British Security Co-ordination and was engaged in training intelligence agents for the allied nations. He is currently general manager of Cloudfoam Limited.

The public service experience he brings to his new appointment includes service as a councillor, deputy-reeve, reeve, and mayor of the Town of Ajax. He has also been associated with the Metropolitan Toronto and Region Conservation Authority, the Waterfront Advisory Committee, and as representative for the east district on the Metro Planning Board.

Mr. Smith is married and lives in Ajax with his wife and three children.

Briefly: Moose hides and conferences

WASTE CONFERENCE

Planning for the 1975 Ontario Industrial Waste Conference, June 15-18, has commenced with the location for the 22nd Conference being changed this year to the new Prince Hotel in Don Mills. Again the Conference will cover all aspects of industrial wastes, including water and air pollution and solid waste management.

FOR INFORMATION:
M. F. Cheetham, Co-Ordinator,
Suite 400,
135 St. Clair Avenue West,
Toronto, Ontario,
M4V 1P5.

APCA CONFERENCE

The Air Pollution Control Association, Ontario Section, will hold its spring conference this year at the King Edward Hotel, Toronto, from April 21 to 24 inclusive.

This year's conference will concentrate on the identification, understanding and control of air pollutants. Some of Canada's experts in the field of stack emission monitoring will review the present testing procedures.

RECYCLING OF MOOSE HIDES

The Ministry of Natural Resources is offering hunters an opportunity to recycle their leftover deer and moose hides.

The hides are collected by the nearest Natural Resources office, tanned and delivered to Indian bands. The Indian craftsmen use them to manufacture mitts, mukluks, jackets and slippers. Last year 5,000 hides were turned in.

Northern Ontario donors are rewarded with a handy angler's tool that can do six jobs in one. It is a hook disgorger, stiletto for cleaning and removing leaders and unsnarling tangled lines, a screw driver, bottle and can opener, and a knife and clipper.

FACE ANNUAL CONFERENCE

Environment Minister William G. Newman and Madame Jeanne Sauve, Canada's Minister of the Environment, will be keynote speakers at a conference at the Royal York Hotel in Toronto April 20 to 23, hosted by the Federation of Associations on the Canadian Environment (FACE).

While Mr. Newman will discuss Ontario's Environmental Action Plan, Madame Sauve will concentrate on Canada and the Human Environment. Other speakers from the Ministry of the Environment will include George Trewin and George Missingham (Monitoring Public Water Supplies), Mel Plewes (Environmental Assessment Legislation), Ray Norton (Water & Sewage Plants), and Bob Doddridge (Training & Certification—Ontario Program).

The conference, the first hosted by FACE, will mark the first time that four major professional associations dealing with the environment are brought together. They include the Pollution Control Association of Ontario, the Ontario Section —American Water Works Association, and the Ontario Municipal Water Association.

Buyer denied a choice

(Continued from Page 1)

ment and inventory and other areas, were taken into consideration.

"We believe that 12 months is a reasonable time in which you can adjust the structure of your industry to these conditions and effect a smooth transition," he said.

The Minister suggested that marketing programs for soft drinks should feature the benefits offered by the returnable, refillable container in terms of energy conservation, of enhancement of the environment and in terms of economy. He also called for some evidence of increased responsibility on the part of the industry for its products. A more direct role in the fight against litter and waste would be an indication of good faith, he said.

NO CHOICE

Mr. Newman called his approach "a tough persuasion" to enlist the industry in the solution of a problem for which it has a responsibility and in which it has a stake.

Public and government concern about throwaway containers has grown for the past five or six years, he said, while the trend has been more and more toward their use. "It has reached the point where the consumer is not given a choice between the refillable and the non-refillable container in a wide variety of brands since in many retail outlets only the non-refillable container is offered for sale."

While the industry has followed this trend, Mr. Newman said he was confident that it could move in a new direction voluntarily.

The Ministry's Task Force on Solid Waste, in a report tabled in the Legislature, pointed in this direction, he said. The earlier report of the Littering Control Council of Ontario, three years ago, indicated the need for change.

Industry representatives have indicated individual willingness to co-operate with the government in increasing the use of refillable containers, he said. "Now we want action from you."

Workmen and equipment (above) clear oil from Bronte Creek. (Below), Paul Young receives his Citation of Merit from Environment Minister Newman as Mrs. Young and the Honorable James Snow, Minister of Government Services and MPP for Halton East, look on.

Citation for spill report

Paul Young, 15, of Oakville, is the first recipient of the Ontario Ministry of the Environment's Citation of Merit. The award was presented to Paul by Environment Minister William G. Newman at Queen's Park last February 13.

Two weeks earlier, Paul discovered a pool of oil on an ice-covered drainage ditch leading into Bronte Creek in Oakville. After taking a sample of the oil he notified the Ministry and the wheels of action began to turn.

The oil leak was traced to a retaining lagoon on the nearby B.P. Oil Refinery property which had overflowed due to heavy rains. The B.P. company sent personnel to the ditch and to the nearby creek and cleanup operations were immediately begun.

In presenting the award to Paul, Mr. Newman said that "there is no doubt that your keen observation and equally keen sense of responsibility greatly assisted the company and the Ministry to meet their respective responsibilities."

The citation, in full reads:

"Paul Young is awarded this commendation for an outstanding contribution to the cause of environmental protection and preservation in the Province of Ontario.

"Mr. Young observed a pool of oil seeping through ice covering a swampy area of land just south of Rebecca St. in Bronte. After collecting a sample, he then traced the flow of this oil along a drainage ditch and discovered it was flowing into Bronte Creek.

"His alert observation and presence of mind in reporting this discovery to the Ontario Ministry of the Environment permitted the Ministry, B.P. Refinery of Canada Limited and other Government and private agencies to take prompt action to contain and clean up the accidental discharge of a potentially hazardous substance.

"There is no doubt that Mr. Young's report contributed to the protection of the environment in his community.

"In recognition of this, and to express the appreciation of the Government and the people of Ontario, this Citation of Merit is presented on February 13, 1975 by The Honourable William G. Newman, Minister of the Environment, and Everett Biggs, Deputy Minister."

Ontario backs recycling project

Ontario is underwriting a new experimental program to recover ferrous metal in St. Catharines, Environment Minister William G. Newman announced recently.

A $100,000 fund has been set up by Environment Ontario — half for initial engineering costs and equipment purchase for the Pelham Road reduction centre and half for the completion of engineering and further capital cost of equipment.

This is an extension of the Ministry's multi-million dollar resource recovery program.

Environment Minister Newman explained: "By establishing this program with the city, we will have nearly 12 months of advance information on metal separation before the province's experimental plant goes into operation in Toronto in June 1976." The official sod-turning ceremony for the Toronto reclamation plant was held Monday afternoon, marking the start of construction.

The provincial assistance will underwrite all engineering and capital costs of the necessary equipment required to investigate the problems of waste management, to do research relating to the overall problem, and to recover ferrous metals from shredded refuse at the Pelham Road centre.

The city of St. Catharines will assume responsibility for the day-to-day operation of the facility, with the Ministry of the Environment to have access to all records relating to metals recovery.

The last patrol

Lawrence Baxter and Rob Varey set out on snowmobiles to check water monitoring stations in Northern Ontario.

The patrol went out in January.

Towing two snowmobiles behind the pick-up, Lawrence Baxter and Rob Varey, Ministry of the Environment staff started out from Thunder Bay Regional office. By the time they reached Nipigon, the gently falling snow became a blizzard.

"If I were by myself I'd turn back," said Rob.

But the OPP had closed the road behind them so they pushed on.

It was 8 p.m. before they reached Nakina. The 200-mile trip had taken seven hours.

Words and Pictures by Jane Thomas, Tessa Buchan Legacy Staff

At Nakina they begin

Lawrence's smiling face is now familiar around Nakina. He is responsible for collecting the field data for the northern lakes surveys and Nakina is one of the bases. From there he usually charters a small plane to get into 10 monitoring stations. Born in Ogoki, a small Indian village 110 miles north of Nakina, Lawrence is often greeted by his parents and a few relatives.

Friendly Rob fitted easily into Nakina's lifestyle and was soon engaged in a mock scuffle on the street with one of the local bush pilots.

The next morning it was too overcast to fly so Lawrence and Rob visited the stations nearest town.

The thermometer read 31° when they started out, Lawrence leading the way through the bush, breaking trail with his snowmobile.

Snowmen on the trail

Rob with his walrus-like mustache covered with ice and his snow covered parka soon resembled a creature from the Himalayas.

Behind Lawrence's machine was a sled full of equipment—survey instruments, a gasoline operated bore, tools, charts, etc.

Trudging through the waist-high snow they dug their way into the first well monitoring station. Inside the hut they moved quickly, taking out the old graph and replacing it with a new one. Dropping a metal cable down a pipe drilled into the watertable, they checked the accuracy of the water level readings. Pulling on their mitts they hurried back to their machines.

By that time the snowmobiles were beginning to act up. It was so cold that ice formed everywhere and parts of the motor had to be continually sprayed with de-icer. Lawrence hit a buried log and was thrown from his machine. The gas lever froze into position and the machine continued on until it came to rest against a tree.

At the next station they checked a streamflow recorder and again changed graphs. The new ink—guaranteed not to smudge—which was installed on the last trip was frozen and had to be replaced by the old black ink.

Gunfire at the station

Rob pointed out bullet holes in the shed. Some hunter had turned his enthusiasm for shooting onto the building.

Ordinarily, Lawrence would have bored a hole in the ice to check the stream flow findings but the water was flowing fast in that area and parts of the river were still open. In other areas, the rivers are sometimes frozen so thick there isn't any water available.

While Rob got out the survey equipment to check the land elevation, Lawrence pulled branches off pine trees and got a fire going. Time for tea.

Suddenly it got noticeably colder and what was left of the sun vanished. Night falls quickly in the north. They quickly gathered up their equipment, and raced the darkness back to town.

Frozen daybreak

The next day was 51 below and touching a door knob with your bare hand meant losing skin. The pilots wouldn't take their planes up.

"We'll take the truck today and cover all the stations that can be reached from the road," said Lawrence. "Tomorrow, if we still can't fly in, we might as well go back to Thunder Bay and come up again next week." Bad weather conditions on his trip to Pickle Lake the previous week had forced several days of inactivity on Lawrence and he wanted to avoid that again if possible.

These plane trips can get very exciting. Like the time the visibility got so bad they stayed low and followed the river or what they thought was a river. In the the nick of time they discovered they were flying into a bay. Incidentally, on all of these trips, the pilot has to take along enough food to survive in the bush for a couple of weeks, in case they are forced down.

But it's all over now. Lawrence and Rob were the last patrol. After 10 years the Northern lakes surveys have been substantially completed although some survey work related to general water studies will continue.

The end of the trail

"In the past there were always two people working full-time on the project and often as many as six or eight," said Bill Creighton, Northwestern Region's chief, water resources assessment. "But it was a difficult program to run. The staff have other duties and when they go up there, what with the weather and the transportation problems, it's hard to know when they are going to return."

"The program started as a joint project of the federal and provincial governments. Exporting water to the U.S. was the topic of discussion then but before making any commitments the government agencies wanted to assess our water resources in Northern Ontario. The project was funded for 10 years and a report was to be issued sometime in 1974."

The exporting idea gradually faded away but the program continued simply to gather information on the availability of water. And, for now at least, enough information has been gathered.

The only thing left to do is to remove all the equipment. Come July, someone will have to go into the bush and retrieve it for other studies in other places.

Lawrence Baxter records readings from equipment in monitoring hut.

Visitors watch one of the zoo's biggest pollution sources, the African elephant.

Housekeeping in a zoo environment

"Unit One to all units in the African paddocks' area," the voice crackles over the communications' network. "Can you read me?"

Two replies are affirmative.

Unit One continues: "Please check on half-a-dozen high-spirited youths heading towards Grevy Zebra exhibit; they haven't caused any trouble yet, but it looks as if they might."

Unseen eyes watch.

And sure enough, later, the youths were seen throwing stones at the baboons.

It was all very much a routine event at Metro Toronto's new zoo, which opened to the public last summer. The incident partly explains the value of communications to the zoo's maintenance staff. But Lionel Musgrove, superintendent of facilities and supply, also sees the communications network as an environmental tool.

"The system allows our staff to keep in constant contact," he says, "so we can quickly be alerted to any emergency, including environmental problems."

"For example, a minor problem might be noticing that a litter bin had overflowed." In fact it is litter than has turned into the most common threat to the natural surroundings. Not only does it present a visual problem, but such things as plastic bags can be dangerous if eaten by the animals.

"We have to make special efforts to keep the zoo tidy," notes Mr. Musgrove. "The public aren't always that co-operative. Although we do often notice people picking up waste paper and placing it in a litter bin."

As can be expected, the major problem areas radiate from the two restaurants and three snack bars located at intervals throughout the 710-acre site.

Thus you'll find the densest concentration of litter containers close to these locations.

Note their design. It's probably unique for Canada, but is modelled on bins used at Brookfield Zoo in Chicago.

Concrete based, they are made of wooden slats (with a plastic bin) to blend in with the surroundings. The slats are designed for easy replacement if any become damaged.

The zoo maintenance staff has already built over 500 of this design and more are planned.

To combat the litter problem further, the zoo staff has an unwritten rule. As Mr. Musgrove explains, "No matter what your job function is, if you see litter you're expected to pick it up."

Once the little is collected, it doesn't present a disposal problem. Garbage is placed into a shredder at the larger restaurants. The rest of the refuse undergoes conventional pick-up. A truck simply carries solid wastes to the landfill—which just happens to be located adjacent to the zoo property. The bins close to the restaurants also have a plastic liner used for quick removal of garbage during peak periods.

This is the route also taken by such other solid waste as bracken, old tree trunks, display material, etc.

The only incinerator for the site is located just off the zoo property. Generally it's used to destroy the smaller dead animals and wastes from quarantine enclosures. The larger animals are sent to the University of Guelph, which has a more suitable incinerator.

Hay, straw and manure will be temporarily stored in small circular underground pits, each topped with a manhole cover. Thirty of these pits are expected to be the initial requirements of the zoo this year.

"This is infinitely preferable to the old zoo method of storing waste outside," says Mr. Musgrove.

A zoo visitor uses one of the litter containers designed and built by zoo staff.

The water that makes life pleasant for the polar bears is channelled into sanitary sewers for treatment.

"With the pits, everything goes below ground. It's cleaner and since contact between waste and people is nil, the chances of disease are minimized. We're also better able to control odors."

The idea is that when the pit is full, the waste can be sucked clear into a heavy-duty mobile vacuum unit.

These pits aren't the only environmental measures on the site. Another comes as a result of what you could call a delicate matter. You see the truth is, some animals are more dirty than others.

And who are the muck producers par excellence? Well, the African exhibit seems to have cornered much of the market. For the hippo, elephant, and rhino have been labelled high pollution sources by the zoo's designers.

Consequently the liquid element of these animals' wastes goes to the sanitary sewer for eventual treatment at a near-by pollution control plant. Pond water from the polar bears, fish and penguins also goes this route, although their waste is not as concentrated as their African neighbors.

The cleaner animals? Here we have deer, goats, sheep, gazelle. Their pond water, plus the zoo's storm water, is diverted into the upper ponding system. This finally channels into a settling pond in the lower reaches of the property. Any particulate matter in the flow can settle to the pond's bottom, while the overflow drops down to the Rouge River.

Water is actually a major component in the zoo's layout. Apart from the numerous animal ponds, there are two pod ponding systems that thread their way through the parkland setting.

The upper system is fed by surface storm run-off, but much of this water, up to 2,000 gallons per minute, is recycled.

The system, which is completely independent of the main fresh water supply, flows over a 35-foot drop series of weirs, waterfalls and ponds. At the far end, it's dammed and then pumped back to the highest pond where it's released again by gravity.

Where possible, designers have tried to reconstruct the animals' wild life environment. At the same time they have wanted to preserve the natural setting.

The wish to maintain things as are, without obvious interference from man, overlaps into another sector of environmental concern: insect control. Indeed, insecticides and herbicides are banned from the site.

Special report by Roger Davies

Former editor of Water and Pollution Control magazine and now a free-lance environmental writer.

Insect control will be by natural means, i.e. using predatory insects that prey on the destructive species.

For example, 50,000 ladybugs were imported from California to control the spider mite and aphids.

Moreover, minute wasps, 1/16th of an inch long, will be used to control a common greenhouse pest, the white fly. The fly lays its eggs on the underside of leaves, which are then used as a food source when the larvae hatch.

The wasp, however, destroys these by laying its own eggs within the white fly pupas.

The target is to use natural methods to maintain the insect population in balance—and hopefully protect the zoo's collection of 5000 tropical plants.

Guardian No. 1 to set sail

Guardian No. 1, the new flagship of Environment Ontario's water quality fleet is ready to set sail from a shipyard in Wheatley, 35 miles southeast of Windsor.

With final touches on construction of the 54-foot, 35-ton vessel completed, she is ready for her first shakedown run in Lake Erie. The fifth Ministry boat on the Great Lakes, Guardian No. 1 will carry a crew of five and a full cargo of scientific equipment for special water quality studies on the Great Lakes.

Elmer "Hike" Haikala, president of Hike Metal Products Ltd., has been in the shipbuilding business since the end of World War II. He has built well over 100 vessels of every shape and size, including the Maid of the Mist III, a scenic vessel used for tourist cruises in the Niagara River. Despite late delivery on a generator used for electrical power within the boat, Guardian No. 1 should be ready for active duty in early April.

The $200,000 steel vessel is powered by twin diesel engines with a combined horsepower of nearly 700. With a crew of five plus equipment, her maximum cruising speed will be 16 knots (18 miles per hour). Guardian No. 1 will allow her crew of professionals to conduct environmental surveys on the Great Lakes, interconnecting channels and the St. Lawrence River.

Sometime in early spring the pride of the Ministry fleet will take on food, supplies, fuel, and her five-man crew, weigh anchor, and glide into Lake Erie for eight months of surveying the province's major water courses.

Photo: Huck Heerema

Oil in the streets

Hamilton work crews clean up crude oil under the supervision of Environment Ontario staff after a tank truck broke open in a collision on Burlington St. Booms across Red Hill Creek contained an estimated 2,000 gallons of spilled oil for cleanup.

New Index for Windsor

Windsor is now the first city in Ontario with two Air Pollution Index monitoring stations to give early warning of high air pollution levels.

The new station, near Prince Road and South Street in West Windsor, will augment the original station established in 1971 at 471 University Avenue West in downtown Windsor.

Doug McTavish, Southwestern Director for the Ontario Ministry of the Environment, said the station will help provide early warning of developing pollution levels which could have adverse effects upon Windsor residents if permitted to continue over an extended period.

"The Index measures sulphur dioxide and particulate matter in the air", Mr. McTavish said. "The new station in west Windsor is strategically located in respect to major Canadian and American sources of contaminant emissions and will greatly improve the effectiveness of our program," he said.

STRUCTURE

The structure of the Index is a numerical scale beginning at O. Readings below 32 are considered acceptable, indicating concentrations of sulphur dioxide and suspended particulate matter that should have little or no effect on human health. At 58, people with chronic respiratory disease may be affected. At 100, prolonged conditions could have mild effects on healthy people and serious effects on those with severe cardiac or respiratory diseases.

The alert system functions at four index levels—32 (Advisory Level), 50 (First Alert), 75 (Second Alert), 100 (Air Pollution Episode).

Teacher Bob Lundy shows Bill Dale lichen growth on a boulder.

ENVIRONMENTAL STUDIES:

Snow is the textbook

Ever tried to cook a meal on the snow?

Well, unless you are an avid outdoors type, you will probably never again even consider the question.

City school students are taking the occasional opportunity to test out their camping capabilities even in the heart of the winter. And, not only are they surviving, they're enjoying the experience in the extreme.

And why not? Once the main problems of cold and dampness are taken care of with proper clothing, sleeping quipment and food preparation techniques, look at the benefits of winter camping—no crowds, beautiful clean white snow, no 'bugs', and the ever-present feeling of accomplishment to have met a challenge and succeeded.

For two years Dan Stoker, the Educational Resources Co-Ordinator for the Ministry, has travelled with groups of high school adventurers to the shores of Lake Huron along the Bruce Peninsula. Last year's trip found the co-ed group braving 17° F temperatures during the night hours. Besides cold noses and cold coffee, even these temperatures did not create any hardships for the well-prepared group.

The camping site was specially selected to meet the interests of the participating students—science or biology club members. Tents were pitched in what is called a deer yard. This is an area where wildlife biologists have found deer living in very high densities through the winter months, presumably to take advantage of unique food and shelter conditions in the deer yards.

On each of the last two camping trips, numerous deer were observed, in some cases at a range of less than 50 feet. The thrill of seeing big-game animals, of such beauty and grace at such close range, can not be compared.

Unlike the rest of the year, winter conditions provide the best opportunity for eager environmentalists to study certain aspects of wildlife behavior. The stories are written in the snow so that timid animals, seldom seen, can be identified and studied through their tracks.

Communication is the challenge

"One of the biggest problems of this region is communications," says Len Pitura. "Our area probably covers 40 per cent of Ontario, so personally visiting the people we deal with is not an easy task."

Mr. Pitura is the director of the Northwestern Ontario Region. He was appointed during the Ministry of the Environment reorganization in April of 1974.

His region covers the Districts of Kenora, Rainy River and Thunder Bay.

"Just visiting our district office in Kenora is a problem in itself. We are about 220 miles away and the easiest means of getting there is to fly to Winnipeg first.

"Thank goodness our Kenora staff are extremely competent and have the initiative to take immediate action when the situation demands."

INDUSTRY

Most of the municipalities in the northwest have programs underway for water pollution control or water supply either through the Ministry or on their own. So the biggest environmental problems are industry oriented.

"We have approximately 10 pulp and paper mills to deal with and this causes the greatest work load in our area.

"In the past with the older mills, it was difficult to institute anything of major importance as far as pollution control went because they were marginal operations. Now many of these mills have announced expansion programs so we're tying in improvements to the existing plants with up-to-date technology for the new facilities.

"If these companies go ahead with their expansion plans, I think we'll have the bulk of the problem cleared up in the next two to three years."

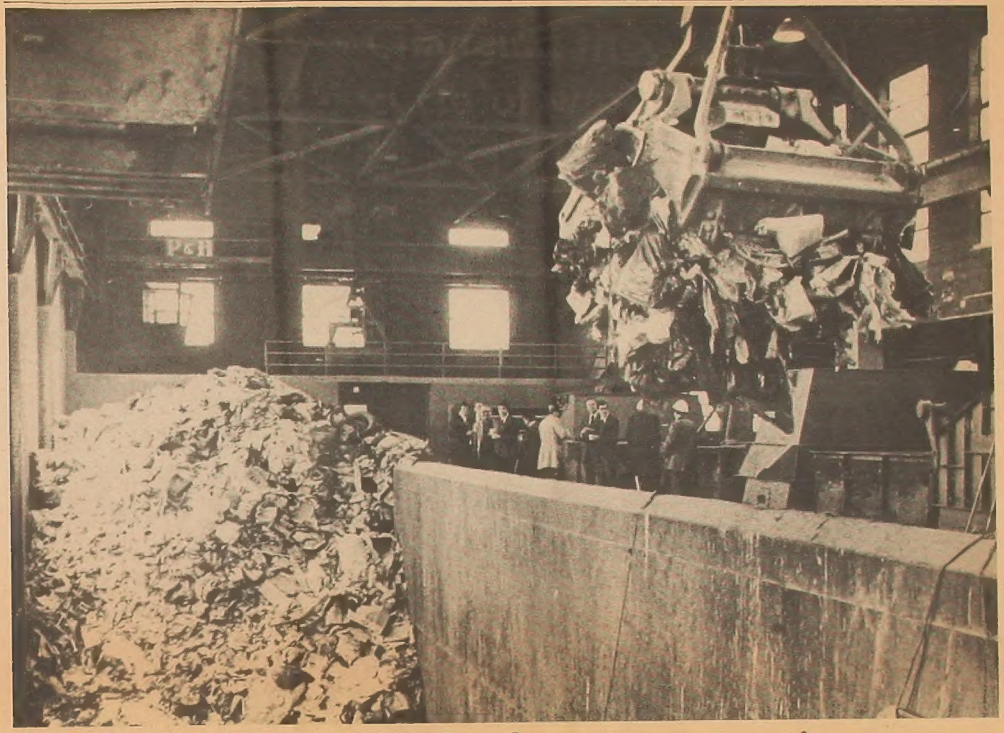
CHALLENGES

Mr. Pitura feels that one of the challenges facing his staff is to convince industrialists to first deal with his office and get their input into future planning, whether it be plant expansion or correction of existing facilities, before they go zooming down to Toronto.

"But I'm slowly seeing a change," says Mr. Pitura. "We have the expertise and the manpower in our new regions to handle this type of problem and I think as we get involved more and more in the industries, they'll come directly here."

Mr. Pitura was born in Manitoba, but attended Kingston's Royal Military College and the University of Toronto. He has been a member of the former Ontario Water Resources Commission and Environment Ontario's staff in Toronto since 1963.

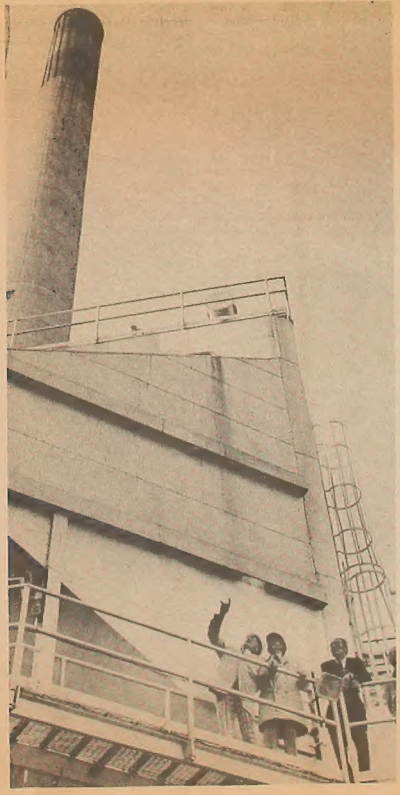
LEN PITURA
(One of a series)



The burning question

Legacy photos by Ron Johnson

In some urban centres, like Toronto, incineration is still part of the answer to dealing with municipal garbage until resource recovery provides a final solution. Here, in the Commissioners St. incinerator, tons of garbage (above) dwarf the staff who deal with it. Environment Ontario staff, inspecting clean-air modifications to the stack (left) and the burners (below), check the systems that stop 99 per cent of the particulate emissions from the plant.



Sudbury air better

An Environment Ontario van loaded with testing equipment, monitors Sudbury's air.

Since the "superstack" has been in operation some very positive results have been observed.

A notable improvement in vegetation is quite evident in areas "close in" to the "superstack". In the last two years Sudbury's A.P.I. (Air Pollution Index) at Ash Street has been over 32, the first alert level, only once; this is one of the better records in the province; in general, air quality in the immediate Sudbury airshed has improved significantly.

In spite of these obvious benefits, air pollution complaints from a more aware and a more demanding public have given rise to a general debate on the pros and cons of the superstack. Certain climatic conditions give rise to localized, high ground level concentrations as illustrated below.

From April through September, 1974, there were air pollution complaints registered on 25 per cent of the days, averaging four a day over this period. The phenomenon of "looping", when the weather is agreeable for outdoor activity may be a factor; also, the increased public education effort of environmentally active groups has also created more interest and awareness in citizens' minds. Today, they know more about why and how to get action, and many more people than before seem to be taking the trouble to file a complaint.

Whatever the reasons for the volume of individual reporting of air source complaints, there are certain conditions when sulphur dioxide levels will locally affect vegetation (people's lawns, gardens and the landscape) and may cause discomfort to some people.

THE THEORY

With a total emission into the atmosphere of approximately 5,200 tons of SO^2 (sulphur dioxide) per day in 1969 and not sufficient technological means to reduce this atmospheric load of emissions quickly, an interim step was sought. The decision was made to construct the "superstack" and apply the dispersion theory.

Basically, the theory is that the maximum concentration of pollution downwind from a source is directly proportional to the emission rate of the pollutant and inversely proportional to the square of the effective stack height. The effective stack height is the height of the centre line of the plume above ground as illustrated in the diagrams below. Maybe the illustration will help explain some of the complications one meets in trying to apply the formula.

Ground level concentrations of contaminants can be controlled by reducing the emission rate or increasing the effective stack height. Reduction of the emission is by far the preferred and most effective method of control. A temporary alternative involves simply increasing the actual height of a chimney and this was the purpose of Inco's "superstack".

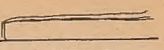
These are the weather phenomena which affect the plume.

LOOPING

Looping occurs when the atmosphere is highly unstable (sunny skies and light winds); there is good diffusion. High concentrations may occur for very short time intervals at specific locations when the plume strikes the ground at these points. Cloudiness and strong winds prevent unstable conditions from forming.

CONING

Coning occurs when the atmosphere is slightly unstable; vertical mixing is not as intense as it is when looping occurs. The plume is cone-shaped. Ground level concentrations of pollution from the high stack can be predicted quite accurately.

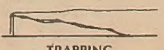


FANNING

Fanning occurs when the atmosphere is very stable; during inversions there is little vertical motion. The plume meanders horizontally with only slight vertical diffusion. Plume concentrations are high and ground concentrations vary according to stack height.

LOFTING

Lofting occurs when a plume is emitted above an inversion. The plume does not reach the ground but is kept aloft in the unstable air.



TRAPPING

Trapping occurs when there is an inversion aloft and an unstable layer of air beneath it. The plume is trapped below the inversion layer. High, ground-level pollutant concentrations accompany this condition. It occurs during persisting periods of high pressure or in advance of an approaching warm front.

Derelict car recycling begins

A campaign to clean up junked motor vehicles in parts of Temiskaming is the opening barrage in a province-wide program to rid Ontario of derelict cars.

Environment Minister William G. Newman said the cleanup campaign includes the reclamation of valuable ferrous and other metals from an estimated 500,000 vehicles now rusting throughout Ontario. About one ton of recyclable metals will be recovered from each hulk.

Mr. Newman said the Temiskaming campaign will involve the establishment or improvement of processing facilities in New Liskeard and Englehart as central assembly sites for the processing of junked vehicles for delivery to the recycling industry.

The cost of collecting and processing derelict vehicles will be underwritten by Environment Ontario through agreements with the Temiskaming municipalities, Mr. Newman explained.

Since derelict vehicles were officially designated 'waste' by Environment Ontario, basic procedures for the collecting and reclamation of junked vehicles have been developed through a series of pilot studies conducted by the Ministry.

"This opening program in Temiskaming will add to our knowledge of the technology and cost of collecting and recycling derelict vehicles, which will in turn benefit other Ontario municipalities as the cleanup campaign expands," said Mr. Newman.

Noise control bylaw ready

An amendment to the Environmental Protection Act, introduced in the Legislature by Environment Minister William Newman, will let municipalities pass bylaws controlling noise pollution within their jurisdictions.

"We have gone to great effort to ensure that this bylaw will not be restricting, but rather will provide the flexibility to suit conditions in the concerned municipality," he continued.

There is provision for provincial approval of each noise control bylaw presented by local councils. This will allow the Ministry of the Environment to assist municipal authorities in developing their program and provide province-wide consistency in the control of noise pollution.

Existing legislation gives municipalities only limited power in the control and regulation of unusual noises. Research has confirmed that it is not broad enough to enact bylaws for the enforceable control of modern day noise emissions.

Complaints up, pollution down

Over the past four years, a number of factors have influenced the ground level concentrations of sulphur dioxide at the Sudbury area monitoring stations. Abatement programs at both complexes of the Inco and Falconbridge Nickel mines have greatly reduced the amount of sulphur dioxide emitted into the air.

The increased amount of monitoring has produced more data on these emissions, and at the same time the installation of more sensitive monitoring equipment has enabled the Ministry to measure more low-level concentrations.

So, while the total number of measurements of sulphur dioxide has increased, because of reduced emissions, the number of high-level readings has decreased.

The monitoring program has shown a steady decrease in the number of fumigations in the area involving sulphur dioxide concentrations high enough to injure vegetation. At the same time, the number of complaints of vegetation injury has increased. Phytotoxicologists, who investigate these complains for the Ministry, say the increased number of complaint investigations stems from increased public awareness.

This increased public concern has led to requests for Ministry staff to examine damaged plants. In 1973, for example, 65 complaints were investigated and 15 cases were diagnosed as sulphur dioxide damage. The others involved insect, fungus, disease or other agricultural problems. During 1972, while only 27 complaints were investigated, 15 were found to be damage caused by sulphur dioxide.

The first work in the Sudbury area into the effects of air contaminants on vegetation began about 1944, but became more intense through the 50's and 60's.

Many federal and provincial government agencies take part in this work; the major bulk of the responsibility today, however is carried by the Ontario Ministry of the Environment. Sulphur dioxide and heavy metals studies in the past few years have shown a significant improvement over "pre-superstack" years.

A network of 11 continuous SO_2 monitors were operated in the Sudbury area during the 1973 growing season (May to October) by the Air quality and meteorological section of the Ontario Ministry of the Environment. Near the end of the season, a 12th station was established at Hanmer, about 12 miles northeast of Sudbury. The network was first set up in 1953 and consisted of 5 stations.

Ministry of the Environment
Ontario

Hon William G. Newman, Minister
Everett Biggs, Deputy Minister

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